higher, the section in which the peristaltic contractions occurred became smaller and smaller, until it was reduced to a narrow segment near the pylorus. After the distension had existed for half an hour, local contractions could no longer be excited by mechanical stimulation; the intestine was evidently paralyzed. In these cases there was no antiperistaltic action. In others, however, the descending contractions on reaching the ligature seemed to return up the bowel for a very short distance, and were even augmented in force just above the ligature, so that the intestine here was emptier than it was higher up. There was no regular antiperistaltic action, and after a short time these "rebounding contractions" ceased, and the distension and paralysis went on as just described. Sometimes, however, the peristaltic action quickly ceased, but the distended bowel seemed to undergo a slow imperceptible contraction, which caused its contents to pass upwards, because the ligature prevented them from passing downwards. In a series of experiments in which the intestine was ligatured through a small opening in the abdominal wall, and was returned into the cavity for some hours before the abdomen was opened, the events were found to be essentially the same. Various injections were also made into the intestine above the ligature. When indifferent liquids were injected, these were moved upwards, sometimes as much as thirty centimetres, although only by the descending peristalsis and the rebounding contractions already described as occurring just above the ligature. Injections of a concentrated saline solution, however, produced distinct ascending antiperistaltic waves, precisely similar to those produced in the unligatured bowel by the same injection, and by them the liquid was quickly moved upwards.

The paralyzing effect of the distension of the bowel above the ligature, which quickly annihilates its movements, throws an instructive light on the well-known injurious effect of purgatives in cases of intestinal obstruction. As they increase the peristaltic contractions, they carry the contents of the intestine more rapidly to the neighbourhood of the obstruction, and so more quickly bring about the paralysis which follows distension.

The results of these experiments are certainly opposed to the idea that fecal vomiting is the effect of any regular antiperistaltic contractions. These were only observed as the effect of the presence of irritant substances in the bowel, and the only condition in man in which this observation can fairly be applied is that in which irritating aperients, such as croton oil or colocynth, have been given. The simple diffusion of liquid contents causes their slow extension upwards, and a still greater effect is produced by the rebounding contractions, but the influence of both these was too slight to allow them to be regarded as the cause of fecal vomiting. The conclusion of Nothnagel therefore is that this symptom results indirectly by the mechanism which Van Swieten rightly assumed. To some very instructive observations of Nothnagel on the movements of the intestines in other morbid states, we must return on another occasion.—*The Lancet*, October 14, 1882.

MATERIA MEDICA AND THERAPEUTICS.

Naphthalin as an Antiseptic.

Owing to the occasional startling constitutional effects produced by the topical application of iodoform, attempts have been made in various directions to discover some antiseptic which would be as useful as that drug, but free from its disadvantages. **Fischer** (Strasburg) claims that he has found such an antiseptic in naphthalin, and has written articles on its use in the *Berliner Klin. Wochenschr.*, 1881, No. 48, and 1882, Nos. 8 and 9; and Anschütz has one in the *Centralbl. f. Chir.*, 1882, No. 32. Fischer read a paper on the subject before the German Medical Congress, reported in a supplement to the *Centralbl.*, 1882, No. 29.

Pure naphthalin occurs in pearly white crystalline plates, and has a specific gravity of 1.1, is somewhat volatile, and melts at 79.2° C. and is sublimed at 150° C. It is quite insoluble in water or wound secretions, and even when given internally is only absorbed in very small quantity. It appears in the urine, when so administered, as naphthalin, and can be separated from that and other secretions by distillation, as it is carried over with the watery vapour and settles down in its crystalline form as the vapour is condensed. It is insoluble in alkalies or weak acids, but dissolves freely in ether, absolute alcohol, or fixed or volatile oils. As met with in commerce it often has a rosy tint, which is due to the presence of carbolic acid. This impurity may be detected by the following test: Boil 10.15 grm. with a little water to which a drop of caustic soda solution has been added, cool and filter. If carbolic acid is present the addition of bromine water to the filtrate, slightly acidulated, produces either opalescence or a milky precipitate according to the quantity present.

Naphthalin is available for all the purposes to which iodoform has been applied, and as yet no constitutional effects have been observed to follow its use locally. It is as powerful an antiseptic and "antibacteric" as iodoform, and has a less disagreeable smell. Its application causes a slight transitory sensation of heat, but no pain. Anschütz states that very sensitive granulations sometimes bleed rather freely after it has been applied, owing to the sharp angles of the hard crystal. This can be obviated by using it in fine powder, though if there is much discharge it is then apt to form a crust on the surface of the granulations. When the crystalline form is used the discharges escape freely.

It may also prove useful as a general disinfectant, as it is cheap, not very volatile at ordinary temperatures, and not hygroscopic. In all parasitic skin diseases, especially in itch (v. Fürbringer in *Berlin. Klin. Wochenschr.*, 1882, No. 10), it has proved of considerable value, and Fischer suggests that it may be used to free domestic animals and plants from the attacks of parasites of all kinds.

It can be readily manufactured in large quantity and at small cost. A firm in Kehl, Baden (Ohlgardt & Cie.), supply it pure at the rate of 1 mk. per kilo., less than sixpence per pound.

Besides the powder the following preparations have been employed:—

Ethereal solution, 10 per cent. for injection, and also solution in oils, for injection or external application in skin affections. Ointments of various strengths can be made with lard or vaseline, and bougies with cacao-butter.

Bandages, made by sprinkling or rubbing the powder into muslin, and then moistening with water.

Gauze, made by dipping into a solution of 1 part of naphthaline in 4 of ether and 12 of alcohol (Fischer).

Naphthalin jute, 1 kilo. of compressed jute steeped in a solution of 100 grm. naphthalin in 400 grm. each of ether and alcohol, and then dried, makes a beautiful silky, white, absorbent dressing (Anschütz).—*Centralbl. f. Chir.*, 1882, Nos. 11, 16, Supplement to 29, and 32.—*Glasgow Med. Journ.*, Nov. 1882.

The Use of Naphthalin Dressings.

FISCHER first employed naphthalin dressings at Strasburg. From experiments and observation, he came to the conclusion that it is an admirable substitute for iodoform. It is quite harmless when used on man, or on the higher mammalia, and possesses a high antiseptic value. In an atmosphere of naphthalin, all animal or vegetable micro-organisms are destroyed, whilst neither wounded surfaces nor the healthy structures around them are in the least irritated. Recently, naphthalin has been used at Strasburg for other purposes besides the dressing of wounds; such as the disinfection of sick rooms and closets, as a parasiticide in certain skin-diseases, and as an inhalation in infectious diseases involving the respiratory organs, such as diphtheria. Dr. ANSCHÜTZ of Königsberg has also published his results, agreeing entirely with Fischer. Whilst he recognizes its excellent antiseptic influence on granulating surfaces, he also says he has discovered disadvantages. He has found blood mixed with the pus from granulations, probably through their being wounded by the sharp edges of the naphthalin crystals. According to Dr. Anschütz, these crystals may also form a crust over the wound, impeding the escape of pus, although Fischer has never found this to occur. Both these surgeons have very seldom seen the slightest symptoms of poisoning from its use. DJANKONOW'S observations are based on thirty cases of wounds and abscess-cavities dressed with naphthalin, and described in the *St. Petersburger Medicinischer Wochenschrift*. His method is thus carried out in operation cases: A carbolized acid spray is turned on to the seat of operation; operator and his assistants wash their hands first with soap, then with a five per cent. solution of carbolic acid, into which the instruments are also submerged. Catgut ligatures and silk, as prepared by Czerny, are employed. The wounds or incisions are first saturated with a three per cent. solution of chloride of zinc, and then wool, dipped in naphthalin, is laid in the wound, and a bandage applied over it; a further layer of wool is covered by oiled silk; and, lastly, a second bandage covers in the whole.

The preparation of naphthalin wool is perfectly simple. The wool is first boiled in soap-lye, and then steeped in an ethereal solution of naphthalin. Anschütz and Djankonow prefer one part of naphthalin to four of alcohol, and four of sulphuric ether. The Russian surgeon employed this dressing for granulating surfaces in ten cases; five had various forms of chronic ulcer of the leg, one had a foul strumous ulcer on the chin; the four remainder had old lacerated wounds, one on the wrist, one on the thigh, one on the leg, and the fourth on the foot. All these cases looked very unfavourable when the treatment was commenced, and all the wounds rapidly became clean when dressed by this process, showing healthy granulations, and cicatrizing at once. According to necessity, the dressings were changed daily, or left on as long as for five days. In twenty recent cases of lacerated wounds, removal of tumours, excisions, and amputations, the results were admirable. In none of the above cases were there any signs of either absorption of naphthalin or irritation. In not one of the operation cases was there any appreciable rise of temperature. The secretions were never pent up by a layer of solidified naphthalin as in Anschütz's cases. Dr. Djankonow particularly recommends naphthalin dressings for surgeons who, like himself, have to treat patients in hospitals deficient in funds and with an insufficient supply of nurses. We must observe that, in this country, many surgeons will attribute more than half the merit of Dr. Djankonow's treatment in operation cases to the use of the carbolized spray.—*Brit. Med. Journ.*, Nov. 25, 1882.

The Action of the Salts of Sodium, Ammonium, and Potassium.

DRS. SYDNEY RINGER and HARRINGTON SAINSBURY have made a number of experiments with these drugs on the excised frog's heart. They find that all three arrest the ventricle in diastole; they contrast, however, in the mode of arrest. Thus, as to their action on rhythm: Potassium salts tend markedly to arrest or suspend the spontaneous contractions, whilst yet the heart may be proved to be contractile by suitable excitation. Ammonium salts show no such tendency; the heart beats, often with an increased frequency, up to the very end—*i. e.*, as long as contractility persists. Sodium salts fit in between, but come very much nearer ammonium than potassium salts, their action on rhythm being very slight.

As to their action on contractility, we have, on the one hand, potassium and ammonium salts acting with almost equal intensity; on the other hand, a wide gap intervening, sodium salts showing but feeble action.

One other point of contrast may be mentioned, it refers to the effect of continuous faradization. This rapidly loses its power to excite the ventricle to contraction when a potassium salt is used; not so for the other bases, and the very slight and somewhat inconstant effect for ammonium and sodium salts contrasts strongly with the uniform and marked effect of potassium salts.

Restricting ourselves to these broad lines[1] of contrast, some important points come out:—

First, an important fact—namely, that throughout the salts of potassium, sodium, ammonium, the potassium, sodium, and ammonium elements are traceable.

Next, that under these simple conditions specified, a certain relation between potassium, sodium, and ammonium salts is manifest. Potassium standing first as most poisonous and threatening in two directions; ammonium coming next, its action being restricted to destruction of contractility; sodium coming last and ranking as but very slightly poisonous comparatively with either. These experiments, indeed, would make potassium salts some fourteen or fifteen times as poisonous as sodium salts. This relation of the salts of potassium, sodium, and ammonium has, however, been tested on other tissues, and found to hold—*e. g.*, on the nervous system.[2] The results also with the entire organism show that, whilst potassium salts are very poisonous, sodium salts can scarcely be made to kill.

Insistence has already been made in various quarters on the use of sodium and ammonium salts in preference to potassium salts; more especially has this been urged for the bromides.[3] (The bromide of sodium has been rather largely used in America.) Clinical evidence must obviously give the final judgment; but have we not here clear indication as to the lines on which clinical investigation should be pursued?—the suggestion being that salts of sodium should throughout be substituted for those of potassium and ammonium, till clinical evidence decide that the action of one or other of these bases is required in the particular case under treatment? This suggestion, then, is based not only on the results of experiments with the entire organism, but also on these more definite results gained from experiments on isolated tissues.—*Lancet*, Nov. 4, 1882.

Physiological Effects of Tobacco.

This is, in a special sense, the epoch of restraints, denials, and abstinences in the discipline of self and the policy of domestic life. Such progress as we are making is marked by a more or less philosophic abandonment of pursuits, pleasures, and habits, and the disuse of certain drinks, foods, and creature comforts which are, or are supposed to be, needless or harmful. It is impossible not to feel proud of the self-denying spirit that pervades society and the community at large, especially in the British isles, albeit, as Kant has most conclusively demonstrated, no genuine self-denial is practicable because the dominant desire or impulse at the moment of seeming to deny self is one of self-sacrifice. In a moral and mental way it is obviously possible to debilitate, instead of strengthening, the will by too much "swearing off" and protesting. It is expedient that a suggestion of this danger should be allowed to mingle with the counsels in favour of abstinences, which are just now so fashionable, and of which many "authorities" are perhaps a little too lavish. Abstinence from the use of tobacco is one of the forms of abstaining which are being pressed on the public with the energy of an active and full-blown fanaticism. We do not share the strong prejudice which finds its expression in this new counterblast. We have condemned, and shall continue to denounce, the abuse of tobacco, by its excessive, untimely, or inappropriate use. Many smokers smoke too much and take in too much of the smoke they make, others abuse tobacco by using it at wrong times and seasons, while to a third class, comprising the young and persons with special susceptibilities, tobacco is injurious in any form or quantity, and at all times, because, owing to the stage of development or some idiosyncrasy of the organism, the nicotine—which it is *impossible* to prevent passing off with the smoke—is in all its doses hurtful and even poisonous. We cannot, however, join in the outcry against tobacco in its moderate and appropriate use. Our reasons for maintaining this position in a controversy, which would seem to be recurrent, will be most readily made evident by a short review of the physiological effects of tobacco, as that commodity is known to the smoker.

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[1] For further details consult papers by the authors in the Medico Chirurgical Transactions (vol. lxv.), and in the Practitioner (Aug. 1882).

[2] Ringer and Murrell: Journal of Anatomy, vol. xii. p. 71. For further reference see also Wood's Therapeutics; articles Potassium Salts; also Phys. Action of Sodium and Ammonium Bromides. Third edition, 1881.

[3] See Wood's Therapeutics, Bromide of Sodium. Also paper on Epilepsy with Cardiac Complications, by W. A. Hollis, M.D., Practitioner, vol. xxii. p. 81.

It is needless to summarize the properties which have been and still are attributed to tobacco in the text-books. These are perfectly well known to the profession and have been repeatedly popularized for the public. It is with the vegetable product burnt in pipes, in the form of cigars or cigarettes, we have to deal. Practically this may be described as the dried leaves of the plant, either finely shredded or rolled nearly intact, in the former case burning very rapidly, in the latter being reduced to ashes perhaps somewhat less speedily, but with little delay. When tobacco is burnt in a clean pipe perhaps half the total quantity of the smoke given off is taken into the smoker's mouth. If an unclean pipe be used, the same quantity of smoke is taken, but, in the act of passing from bowl to stem, the smoke probably takes up some of the old oil which has accumulated in the pipe. In the case of a cigar, the smoke derived from the burning extremity of the roll of leaves is drawn between the layers of the latter with the result that probably a cigar is equivalent to a clean pipe until it has been burnt to the extent of two-thirds of its length, when it must be considered in the light of an often-used or foul pipe, because the heat and friction of the smoke have caused even the proximal portion of the burning leaves to begin to give off their oil. A cigarette is to all appearance, and, perhaps, in fact, generally speaking, a particularly mild form of pipe; but it must be remembered that the tobacco in a cigarette, being very finely shredded and only loosely pressed together, burns more rapidly than the tobacco in the bowl of a well-loaded pipe, and that it is placed much nearer the mouth than in any pipe, except it be the very short one used by navvies. It is therefore likely to happen that the habitual and almost continuous smoker of cigarettes—the man who seldom has one out of his mouth except at meals, and even then can scarcely refrain from a whiff—may in the course of the day consume a very large quantity of tobacco without perhaps being conscious of excess. The form of the "smoke" has, therefore, evidently a bearing on the amount of tobacco consumed. The mode of taking in the smoke is also important. Some smokers simply take the smoke between their lips, and, scarcely allowing it to enter the mouth, blow it out again; while others hold the smoke in the mouth, even carrying it back to the fauces, and occasionally ejecting it through the nose. The smoker who draws the greatest amount of smoke and keeps it longest in contact with the lining membrane of the air-passages undoubtedly takes the largest dose of the oil.

There are three points to consider—first, the local effects of the oily vapour from the burning leaves; second, the immediately contingent effects of the tobacco; and, third, its remote or secondary effects. Each of these would call for special study in an exhaustive investigation of the subject. We cannot, on the present occasion, do more than suggest the line of inquiry to be pursued. As regards the local effects, it is especially desirable to be observant. There can be no question that the influence exerted on the mucous membrane of the lips, mouth, tongue, palate, epiglottis, larynx, and fauces by smoking is important. There is first dryness, then hyperæmia of the membrane itself, next comes excitation of the nervous filaments distributed throughout the region, with direct irritation of the centres, and reflex stimulation of the glands. In consequence of this last-mentioned set of effects, we get either increased secretion or very prompt emptying of the salivary glands, and either waste of the saliva, or the passage of that fluid into the stomach—probably at the time empty. The saliva is, moreover, to some extent impregnated with the oil derived from the smoke of the tobacco. It is easy to see how local disturbances, such as epithelial growths, innocuous or malignant indurations, and the like, may be induced by smoking; how the nervous centres connected with the various nerves distributed to the mouth, tongue, and fauces may be affected; how the salivary glands may be over-stimulated and exhausted; and how the stomach may be disordered. The passage of salivary fluid into an empty stomach may help to appease the appetite, but it can scarcely improve the digestion. Other local effects might be mentioned, but they will suggest themselves. Next come the immediately contingent effects of smoking. These may be either stimulating, sedative, or toxic, as the quantity of the nicotine actually introduced to the system—a very difficult point to settle—varies or the idiosyncrasy of the smoker may determine. The sum of the investigations that have been made in connection with this phase of the subject would seem to show that nothing short of direct experiment in any particular case can supply the requisite data for determining how the smoking of tobacco is likely to affect an individual. And the deduction which may be hastily drawn from a few experiments will need to be qualified by the further consideration that the susceptibility of the organism for the influence of tobacco-smoking varies in a very special degree with those changes of state to which all systems, and specially those of the class of persons who require or desire the use of tobacco, are subject. One man can smoke with the best results when he is hot, another when he is cold; one needs to have a full stomach, while another enjoys his smoke most in the early morning, or when he is hungry; one will take his pipe or cigar when he has to think, another must be idle to profit by it; and so on. With every change of mind, nerve-state, and condition of health, the susceptibility to tobacco varies. It is useless to try to lay down any precise law as regards its action. The use of the "weed" is in every case experimental, and its immediately contingent effects are incapable of prediction. As a rule, however, we believe they are, in the moderate use of tobacco, according to the individual taste, good instead of evil; but the patient, rather than the doctor, is the judge of results, and it is policy on the part of the latter to refrain from dogmatizing on the subject in any special case. The remote or secondary effects of tobacco-smoking are certainly not *cumulative*. There is not a particle of evidence which can be legitimately pressed into the service of the assumption—sometimes recklessly and unscientifically made—that they are so. A man may exhaust the strength of his nervous system and thus lower its tone, or he may impair his digestion, by habitual excess in smoking, but these results are in no sense cumulative, nor has the agent by which they have been produced been cumulative in its energy. The disastrous effects of tobacco-smoking—when too much is smoked or the tobacco is too strong—are those of persistency in the use of an injurious article, not a piling up of its effects. This is especially indicated by the state of the pulse in habitual smokers to excess. The sphygmograph shows a depressed state of the vessels while the smoking continues, and for a short time after a pipe, but the effect generally passes off when the use of the drug is abandoned for a few hours. So with the disturbance of digestion produced by excess in tobacco-smoking, and with its other "evil consequences," which have been much exaggerated.

There is very little, if anything, to be said against the moderate use of tobacco in an average state of the organism. Those who are unfavourably affected by it should abstain, and it is wholly inadmissible in youth. We would go so far as to say that no young man should smoke before he has attained his majority, and it would be well if he deferred the use of tobacco altogether, and in every form, until the extreme limit of development, which may be placed at the age of twenty-six. It is impossible to give any precept as to the time and mode of smoking. Personal sensibilities differ so widely that no common premises can be laid down. Speaking generally, the points of caution should be to avoid—irritation of the mucous membrane of the mouth and fauces, loss of the salivary secretion, and super-excitement of the nerves and nerve-centres. Cigars are better than pipes, and far better than cigarettes; but no cigar should be smoked for more than three-fourths of its length, even with a mouth-piece. The smoke should be taken into the front of the mouth and ejected as rapidly as possible. Properly and moderately employed, tobacco-smoking is not a baneful habit, but one that may be reasonably enjoyed.—*Lancet*, Nov. 4, 1882.

MEDICINE.

Hæmoglobinuria.

It is now some years since the paroxysmal and non-toxic form of this disease was first observed and described; but while much has since been done in the way of rendering our knowledge of it more complete, there still remains considerable uncertainty on many points regarding the disease. This uncertainty can be resolved only by the careful record and collation of individual cases, and therefore no excuse need be offered for bringing together the results of three cases recently recorded.

The most important of these is undoubtedly that placed on record by Dr. FLEISCHER (*Berl. Klin. Wochenschrift*, 1881, No. 47). The patient was a young soldier, aged twenty-three, of good family history, and good general health. In the beginning of the previous year, after a severe march, he noticed for the first time that his urine was bloody in colour. The symptom was unaccompanied by rigors, sweating, or pain in the region of the kidneys. By the evening his urine